Conservation Law Foundation • Earthjustice • Environmental Integrity Project • Sierra Club

October 22, 2014

Sharon DeMeo
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (OEP06-1)
Boston, MA 02109-3912

RE: Revised Draft Permit for Merrimack Station, NPDES Permit No. NH0001465, Response to Comments

Dear Ms. DeMeo,

Earthjustice, Environmental Integrity Project, Sierra Club, and the Conservation Law Foundation submit these responses to comments submitted by other parties on the revised draft National Pollutant Discharge Elimination System ("NPDES") permit for Merrimack Station, NPDES Permit No. NH0001465. Several industry parties, such as the Utility Water Act Group ("UWAG") and Public Service of New Hampshire ("PSNH"), recycle flawed arguments that EPA Region 1 lacks the authority to use its best professional judgment ("BPJ") to determine the best available technology economically achievable ("BAT") for Merrimack Station's discharges of flue gas desulfurization ("FGD" or "scrubber") wastewater. These commenters ignore that EPA's 1982-era national effluent limitations guidelines ("ELGs") for electric generating units ("EGUs") expressly declined to determine BAT for FGD wastewater, and, in the absence of any applicable ELGs, permitting authorities must determine BAT using their best professional judgment. Furthermore, contrary to UWAG's assertion, even if EPA Region 1 were to have relied on the Hanlon Memorandum, it is appropriate for the Region to reference a lawfully issued guidance document. UWAG's criticism of Region 1 for relying on the Hanlon Memorandum fails for the additional reason that EPA Region 1 has not relied on the Hanlon Memorandum in issuing the draft, revised permit.

Not satisfied with disregarding the existing Clean Water Act ("CWA or "Act") requirement for EPA Region 1 to make a BPJ determination, UWAG and PSNH proceed to invent legal requirements. Both UWAG and PSNH rely heavily on claims regarding the cost-effectiveness of the VCE and crystallizer system, even though they can point to no law requiring a permitting authority to consider cost-effectiveness when making a BAT determination. More importantly, UWAG and PSNH commit a simple, but fatal, error in calculating costs and cost-effectiveness: they fail to calculate the incremental cost to comply with the final permit. Instead, UWAG and PSNH defy both common sense and EPA's long-standing practice by including past capital costs, and current operating and maintenance costs, in their calculation of how much it would cost for PSNH to comply with the final permit. But the cost to comply with a permit that merely requires a facility to continue doing what it is already doing is zero. To the extent that compliance with the final permit requires operational changes, PSNH's current costs are the baseline for calculating the cost to comply with the final NPDES permit.

Comments that technical issues prevent PSNH from meeting a zero liquid discharge ("ZLD") standard are just as meritless. The technical problems described by PSNH in its comments are largely problems of its own making, stemming from PSNH's failure to operate the Merrimack Station using coal blends within the design parameters of the FGD system, as well as PSNH's failure to optimize its FGD wastewater treatment system through such measures as adding sufficient tanks to store wastewater for later treatment, implementing an effective softening pre-treatment process to improve the reliability of the system, and/or adding redundant components to allow for treatment to continue when some components require maintenance. Nothing in the comments of PSNH, UWAG, or any other party demonstrates that PSNH's existing system could not be optimized to cost-effectively achieve ZLD for FGD wastewater. A recent study from Indianapolis Power & Light ("IPL") further confirms this, finding that a similar technology to that upon which EPA Region 1 is basing its revised BAT determination here can achieve ZLD and is IPL's best available CWA compliance option for treatment of FGD wastewater.

For these reasons, comments that the agency should not find that a zero discharge limit is BAT for Merrimack or that PSNH's system is not feasible to achieve ZLD at Merrimack have no merit. EPA should finalize its revised determination that BAT requires Merrimack to eliminate the discharge of FGD wastewater.[1]

I. UWAG AND PSNH'S COMMENTS MISCHARACTERIZE THE LAW AND THE LEGAL FOUNDATION FOR THE REVISED DRAFT PERMIT.

UWAG and PSNH advance novel interpretations of the law that conflict with the Clean Water Act and EPA's and the courts' long-standing interpretations of the statute. UWAG and PSNH's assertion that a best professional judgment determination is inappropriate because effluent limitations guidelines exist for scrubber wastewater is simply wrong; in the most recent ELGs for the steam electric generating industry, finalized in 1982, EPA expressly declined to make a BAT determination for scrubber wastewater. UWAG next argues that EPA errs by treating the Hanlon Memorandum as a binding rule, but EPA Region 1 has done no such thing, as evidenced by UWAG's failure to cite a single passage in the draft revised fact sheet that cites to the Hanlon Memorandum. Even if Region 1 were to rely on the Hanlon Memorandum, there would be nothing unlawful about supporting a decision with reference to agency guidance. Finally, UWAG suggests that Region 1 cannot issue a BPJ determination that conflicts with the proposed ELGs, and PSNH contends that it is improper to issue a BPJ determination while the national ELGs are being finalized. However, there is no inconsistency between the BAT determination here and the proposed ELGs, and even if there were, the problem lies with the proposed ELGs, not with Region 1's draft revised permit. Moreover, given the different scope of

[1] If EPA Region 1 does not finalize its revised, proposed BAT determination, then at a minimum the Region should finalize its original proposal that BAT is based on the use of physical and chemical treatment followed by biological treatment. None of the comments submitted by industry on either the original or revised draft permits should cause Region 1 to second-guess its original determination that biological treatment is both available and cost-feasible.

the decisions, it is possible for a permit writer to reach a reasonable BAT determination for an individual plant that differs from EPA's BAT determination for an entire industry.[2]

A. EPA Region 1 is Authorized and Required to set BAT Limits on a BPJ Basis for Merrimack Because EPA Has Never Issued ELGs Determining BAT Limits for Scrubber Wastewater.

UWAG and PSNH's first misstatement of the law is their assertion that EPA Region I cannot determine best available technology limits using its best professional judgment because EPA has already promulgated BAT limits in the nation-wide effluent limitations guidelines. Letter from Elizabeth E. Aldridge, Hunton & Williams to Sharon DeMeo, EPA Region 1 at 5-6 (Aug. 18, 2014) [hereinafter UWAG Comments]; Comments of Public Service Company of New Hampshire on EPA's Revised Draft National Pollutant Discharge Elimination System at 64, 162-64 (Aug. 18, 2014) [hereinafter PSNH Comments]. EPA could not have been clearer during its last revision of the ELGs that there are no BAT limits for scrubber wastewater for existing electric generating units. The 1982 ELG rule stated that "EPA is reserving effluent limitations for four types of wastewaters for future rulemaking. These four waste streams are: (1) Non-chemical metal cleaning wastes (2) *Flue gas desulfurization waters* . . ." 47 Fed. Reg. 52,290, 52,291 (Nov. 19, 1982) (emphasis added). While EPA has proposed BAT limits for scrubber wastewater in the forthcoming ELG rule, that rule has not yet been finalized. *See* 78 Fed. Reg. 34,432 (June 7, 2013). As there are no preexisting BAT standards for scrubber wastewater from steam electric generating units such as Merrimack, EPA Region 1 is not just authorized but indeed is *required* to include technology-based limits on the discharge of scrubber wastewater using its best professional judgment.

As we explained in our comments on the draft revised permit, the Clean Water Act prohibits the discharge of a pollutant to waters of the United States except pursuant to a National Pollutant Discharge Elimination System ("NPDES") permit. 33 U.S.C. § 1311(a). A NPDES permit may be issued only "upon condition that" it ensures, *inter alia*, that the requirements in 33 U.S.C. § 1311 are met. *Id.* U.S.C. § 1342(a)(1). Section 1311, in turn, specifies increasingly stringent technology-based effluent limitations ("TBELs") that must be included in NPDES permits pursuant to section 1342(a)(1). *Id.* § 1311(b)(1)(A) (effluent limitations requiring best practicable control technology shall be achieved); § 1311(b)(2)(A) (effluent limitations requiring best available technology economically achievable shall be achieved). All sources and all pollutants must be subject to technology-based effluent limitations, and more stringent limits may also be necessary to avoid exceedances of water quality standards; even where instream water quality criteria are met, dischargers still must reduce their pollutant loading in accordance with technology-based effluent limitations. *See id.* §§ 1311(b)(2)(A), 1312(a); 40 C.F.R. § 125.3(a); *see also PUD No. 1 Jefferson County v. Wash. Dep't of Ecology*, 511 U.S. 700, 704 (1994) (state water quality standards are "supplementary" to required plant-by-plant TBELs)

[2] UWAG raised these same legal issues in its comments on the draft NPDES permit for Merrimack Station. *See* Letter from John Christman, Hunton & Williams to EPA Region 1 at 26-31 (Feb. 28, 2012). Our comments addressed some of the same legal issues. *See* Letter from Melissa Hoffer, Conservation Law Foundation to John Paul King, EPA Region 1 at 6, 31 (Feb. 28, 2012).

(citing *EPA v. Calif. ex. rel. Water Res. Control Bd.*, 426 U.S. 200, 205 n.12 (1976)); *Am. Petroleum Inst. v. EPA*, 661 F.2d 340, 344 (5th Cir. 1981) (TBELs are a necessary minimum requirement for a permit "regardless of a discharge's effect on water quality"); *Hooker Chem. & Plastics Corp. v. Train*, 537 F.2d 620, 623 (2d Cir. 1976) (CWA "predicate[s] pollution control on the application of control technology on the plants themselves rather than on the measurement of water quality").

Of particular relevance to this permit is section 1311(b)(2)(A), which for certain pollutants mandates the achievement of effluent limitations that shall require the application of the best available technology economically achievable, as determined according to the effluent limitations guidelines EPA issues pursuant to section 1314(b)(2)(B). Where no such effluent limitations guidelines exist, the technology-based effluent limitations, including the BAT limitations, must still be achieved. In the absence of applicable ELGs, the mechanism for achieving the effluent limitations is the development of BAT limits on a case-by-case basis and inclusion of such limits in NPDES permits. 40 C.F.R. § 125.3(a), (c)(3); *see generally Tex. Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 929 (5th Cir. 1998) ("Individual judgments thus take the place of uniform national guidelines, but the technology-based standard remains the same."); *NRDC v. EPA*, 859 F.2d 156, 199 (D.C. Cir. 1988) (noting that the factors considered in setting the technology-based limits in a BPJ determination "are the same factors used in establishing effluent guidelines"). In short, contrary to UWAG and PSNH's assertions, the Clean Water Act not only authorizes, but also requires, EPA Region 1 to use its best professional judgment to determine what constitutes BAT for Merrimack's discharges of scrubber wastewater.

B. Reliance on the Hanlon Memorandum Would be Lawful, Even Though There is no Evidence EPA Region 1 Relied on the Memorandum in Issuing the Draft, Revised Permit.

Because EPA Region 1 is simply following the long-established requirements of the Clean Water Act and EPA implementing regulations in proposing case-by-case TBELs here, UWAG's argument that Region 1 impermissibly relies on the Hanlon Memorandum misses the mark. First, as UWAG itself notes, the Hanlon Memorandum was never intended by EPA to be a legally binding rule and says as much on its face. UWAG Comments at 7. This is because the Memorandum effects no change in the law: it neither "mark[s] the consummation of the agency's decisionmaking process" with respect to effluent limitations for power plant FGD wastewater, either nationally or at any particular plant, nor is an action "by which rights and obligations have been determined, or from which 'legal consequences will flow.'" *Appalachian Power Co. v. EPA*, 208 F.3d 1015, 1022 (D.C. Cir. 2000) (quoting *Bennett v. Spear*, 520 U.S. 154, 177-78 (1997)).

Rather, the Memorandum was intended by EPA to be mere guidance, which EPA made available to states, industry, and the public during the period prior to revision of the power plant ELGs to address FGD wastewater. EPA need not have observed notice and comment rulemaking procedures for this guidance document. The Memorandum does not itself have direct legal consequences but instead simply restates the Clean Water Act's requirements: effluent limitations reflecting the use of the best achievable technology economically achievable must be achieved, 33 U.S.C. § 1311(b)(2)(A); the NPDES permit must contain BAT limits, whether those limits come from ELGs or from a case-specific BPJ determination. 40 C.F.R. §

125.3(a), (c)(3). Having announced no new interpretation of the statute, and caused no change in the law, the Hanlon Memorandum is not itself a legally binding rule and EPA was not required to go through notice and comment procedures prior to issuing the Memorandum.

Moreover, UWAG's comments fail to establish that Region 1 has relied on the Hanlon Memorandum at all in issuing the revised draft permit. UWAG fails to cite any portion of the revised draft permit, or the accompanying fact sheet, that even mentions the Hanlon Memorandum. Instead, UWAG resorts to citing a portion of the fact sheet that "cit[es] to the 2011 Fact Sheet, Attachment E, which relies heavily on the so-called 'Hanlon Memorandum.'" UWAG Comments at 6. This highly attenuated reference is the best evidence of reliance on the Hanlon Memorandum that UWAG can dig up, but at best it merely shows that the 2011 draft permit relied on the Hanlon Memorandum—not that Region 1 has relied on it to support its revised BAT determination for the draft permit currently at issue.

In short, even if Region 1 had relied on the Memorandum, the Memorandum is not a rule because the document expressly disclaims any legal effects and because the document announces no new interpretation of the law. Therefore, EPA was not required to observe notice and comment procedures in issuing the Memorandum, and EPA Region 1 may lawfully consider the Memorandum. But UWAG's argument fails for a more basic reason: EPA Region 1 has not relied on the Hanlon Memorandum in issuing the revised, draft permit.

C. A Technology Can Be BAT for One Plant Even if It Is Not BAT for the Industry.

UWAG contends that "it would be anomalous if EPA Region I were to require the Merrimack system as BAT at the same time that EPA Headquarters, in its ELG rulemaking for the steam electric industry, has so far *not* selected VCE as BAT." UWAG Comments at 25. But there would be nothing anomalous about such a situation, taking into account what EPA said about VCE systems in the proposed effluent limitations guidelines. EPA rejected Option 5, which would, *inter alia*, set a zero liquid discharge standard for FGD wastewater, because of the allegedly high cost to the industry as a whole. 78 Fed. Reg. at 34,473 ("EPA did not select Option 5 as its preferred option for BAT because of the high total industry cost for the option ($2.3 billion/year annualized social cost) and because of preliminary indications that Option 5 may not be economically achievable."). EPA's concerns about the costs to the industry to install VCE systems do not apply to the Merrimack Station, since it has already paid for and installed a VCE and crystallizer system. *See Am. Petroleum Inst. v. EPA*, 787 F.2d 965, 974 (5th Cir. 1986) (upholding two area-wide permits based on practices currently employed in those areas, despite industry's arguments about the increased cost to the industry if the permit limits were used as the basis for nation-wide effluent guidelines); *see also In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490, 544 (2006) (finding that EPA Region 1 adequately considered costs in setting BAT limits by taking into account the costs to the facility owner).[3]

[3] As we noted in our comments on the proposed ELG rule, we strongly disagree with EPA's assertion that the industry as a whole cannot afford Option 5. EPA Docket ID No. EPA-HQ-OW-2009-0819-4684, Attachment at 18-29. EPA's rejection of Option 5 is not supported by the record that the agency compiled in support of the proposed rule and is therefore arbitrary and capricious. *See id.*

Moreover, in the proposed ELG rule, EPA noted that zero liquid discharge technologies such as VCE are available and may be the basis of NPDES permit limits for individual facilities:

> Although EPA did not select Option 5 as the preferred BAT option, without question, Option 5 would remove the most pollutants from steam electric power plant discharges. Also, the technologies are all potentially available and may be appropriate (individually or in totality) as the basis for water quality-based effluent limits in NPDES permits, depending on site- specific conditions. For example, any of the requirements that would be established under Option 5, including at a minimum the vapor compression evaporation technology serving as the Option 5 technology basis for FGD wastewater, may be appropriate for those power plants that discharge upstream of drinking water treatment plants and that have bromide releases in wastewaters that impact treatment of source waters at the drinking water treatment plants.

78 Fed. Reg. at 34,473. UWAG seems to concede that use of a VCE system may be feasible at one plant even assuming for the sake of argument that EPA is correct to conclude in the proposed ELG rule that VCE systems are not feasible for the industry as a whole. UWAG Comments at 26 ("Assuming, for the sake of argument, that Merrimack has solved its significant operational issues, that does not mean that VCE systems are feasible BAT technologies for the industry as a whole."). UWAG here acknowledges that the different scope of a BPJ determination (a single plant) and an ELG rule (an entire industry category) can lead to different BAT determinations. *See Am. Petroleum Inst.*, 787 F.2d at 974. For these same reasons, PSNH's complaints about EPA Region 1 issuing a BPJ determination while EPA finalizes the national ELGs, PSNH Comments at 164-67, have no merit, particularly given the express language in the proposed rule that technologies that can achieve ZLD are available and may be appropriate for particular plants. 78 Fed. Reg. at 34,473.

In short, there is no conflict between EPA's findings in the proposed ELG rule and Region 1's findings in the revised draft permit. EPA's concern about the cost for the industry as a whole to install VCE at plants that do not already have VCE systems does not apply to Region 1's permitting decision for the Merrimack Station that has already spent the money to install and operate a VCE system. *See* Fact Sheet at 41-42. Debates about whether the industry as a whole can afford VCE technology have no bearing on this permitting decision, since the undisputed fact is that PSNH was able to afford a VCE and crystallizer system and is currently seeking approval from the New Hampshire Public Service Commission to recover from its ratepayers the full costs of installing and operating the system. *See* Direct Testimony of Frank T. DiPalma & C. Larry Dalton, Jacobs Consultancy, *In re: Pub. Serv. Co. of N.H. Investigation of Merrimack Station Scrubber Costs & Cost Recovery*, Case No. DE 11-250 (N.H. P.U.C.) (dated Dec. 23, 2013), at 36-37 (attached as Exhibit A) (New Hampshire Public Utilities Commission staff consultant finding that the VCE and crystallizer system is "providing immediate benefits" to ratepayers and that "PSNH felt that [installation of the VCE and crystallizer system] was a prudent decision" to enable operation of its FGD prior to renewal of its NPDES permit) [hereinafter Jacobs Consultancy Testimony], *available at*

http://www.puc.state.nh.us/regulatory/CASEFILE/2011/11-250/TESTIMONY/11-250%202013-12-23%20STAFF%20DTESTIMONY%20F%20DIPALMA_C%20DALTON.PDF.[4]

Accordingly, the cost of complying with a permit limit based on use of the VCE system as currently operated would be zero, and EPA is entitled to consider the Merrimack Station's specific circumstances, rather than looking at the industry as a whole, when setting a case-by-case TBEL for the Merrimack Station. To the extent that the final NPDES permit requires PSNH to continue operating Merrimack as it is currently operated, the costs attributable to EPA's permitting decision are zero. It is appropriate for EPA Region 1 to consider only those costs, if any, that PSNH would have to incur to install new equipment or increase operating and maintenance expenses to run the treatment systems in a manner different than they are currently operated.

Finally, to the extent that there is an inconsistency between the proposed ELGs and Region 1's decision for Merrimack, the problem lies with the proposed ELG rule. As we noted in our comments on the proposed ELGs, we strongly disagree with EPA's proposed rejection of Option 5. The record compiled by EPA in support of the proposed ELG rule demonstrates that VCE technology is an available technology for the treatment of FGD wastewater and the cost of VCE systems can be borne by the industry as a whole. EPA Docket ID No. EPA-HQ-OW-2009-0819-4684, Attachment at 18-29.

II. UWAG AND PSNH INVENT A NON-EXISTENT LEGAL OBLIGATION TO CONSIDER COST-EFFECTIVENESS AND RELY ON COSTS NOT ATTRIBUTABLE TO THIS PERMITTING DECISION.

In their zeal to oppose the revised draft permit, UWAG and PSNH use both the wrong legal standard for BAT and the wrong cost-effectiveness numbers for this permitting decision. UWAG and PSNH's assertion that this permitting decision would set a new high-water mark for what is cost-effective fails because EPA has no legal obligation to consider cost-effectiveness at all when making a BAT determination. Moreover, since cost-effectiveness calculates costs per ton of pollutant removed, it is a form of cost-benefit balancing, which the Clean Water Act forbids when making BAT determinations. Even if it were proper for EPA to consider cost-effectiveness, which it is not, EPA Region 1 properly concluded that a final permit prohibiting the discharge of scrubber wastewater would lead to no incremental costs because Merrimack is already achieving this effluent limit. In violation of both common sense and EPA's long-standing practice, both UWAG and PSNH mistakenly calculated costs by ignoring the reality that PSNH has already incurred the capital and operating and maintenance costs to install and operate the VCE and crystallizer system. EPA properly concluded that an effluent limitation that can be met by operating controls in the same way they are currently operated has an incremental

[4] Commenters Conservation Law Foundation and Sierra Club are parties to this docket and are challenging PSNH's efforts to pass along the costs of the $425 million scrubber project to ratepayers.

compliance cost of zero.[5] Accordingly, EPA's revised draft permit would be cost-effective if finalized.

A. EPA is Not Required to Consider Cost-Effectiveness.

UWAG and PSNH's argument that EPA Region 1 inappropriately proposes to establish a new threshold for cost-effectiveness assumes that EPA must consider the cost-effectiveness of potential BAT technologies. *See* UWAG Comments at 12-21; PSNH Comments at 136-38. But UWAG and PSNH cite no legal authority for that proposition. UWAG cites the statutory requirement to consider "the cost of achieving such effluent reduction," 33 U.S.C. § 1314(b)(2)(B), but cost and cost-effectiveness are not identical.

The Clean Water Act requires consideration of the factors enumerated in section 1314(b)(2)(B) when establishing effluent limitations guidelines for BAT. The "cost of achieving such effluent reduction" is one of the factors that must be considered. 33 U.S.C. § 1314(b)(2)(B). For the ELGs, which apply industry-wide, a technology passes the cost test if "the costs can be reasonably borne by the industry." *Waterkeeper Alliance v. EPA*, 399 F.3d 486, 516 (2d Cir. 2005); *Rybachek v. EPA*, 904 F.2d 1276, 1290-91 (9th Cir. 1990) (discussing this standard). For a BPJ determination, which applies to a single facility, a technology passes the cost test if the costs can be reasonably borne by the facility owner. *See Am. Petroleum Inst.*, 787 F.2d at 974 (upholding two area-wide permits based on practices currently employed in those areas, despite industry's arguments about the increased cost to the industry if the permit limits were used as the basis for nation-wide effluent guidelines); *see also In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. at 544 (finding that EPA Region 1 adequately considered costs in setting BAT limits by taking into account the costs to the facility owner).

While EPA Region 1 must consider costs in determining what constitutes BAT for Merrimack, Region 1 is not required to consider cost-effectiveness. We are not aware of any court that has rejected a BAT determination for failure to consider cost-effectiveness. Just the opposite: numerous Circuit Courts of Appeal have held that EPA is not required to balance costs against benefits when promulgating effluent limitations guidelines for BAT. *See, e.g.*, *BP Exploration & Oil, Inc. v. EPA*, 66 F.3d 784, 799-800 (6th Cir. 1995) (rejecting industry demand for cost-benefit analysis because BAT "does not require cost-benefit analysis" and "EPA need only find … that the cost of the technology is reasonable"); *Rybachek v. EPA*, 904 F.2d at 1290-91 (EPA "need not compare [control] cost with the benefits of effluent reduction"); *Reynolds Metals Co v. EPA*, 760 F.2d 549, 565 (4th Cir. 1985) ("no balancing is required" for BAT); *CPC Int'l Inc. v. Train*, 540 F.3d 1329, 1341-42 (8th Cir. 1976) (BAT guidelines are "governed by a standard of reasonableness without the necessity of a thorough cost-benefit analysis"); *Am. Iron*

[5] Given that EPA's draft revised permit contemplates that PSNH could meet a zero discharge limit by continuing to transport brine concentrate and/or distillate off-site for disposal, EPA properly calculated the incremental cost attributable to its permitting decision as zero. However, in our comments on the draft, revised permit, we urged EPA to ensure that PSNH cannot discharge Merrimack's FGD wastewater to POTWs because POTWs are not equipped to adequately treat the pollutants in FGD wastewater. We reiterate our support for EPA Region 1 taking all necessary steps to halt the discharge of Merrimack's FGD wastewater to POTWs.

& Steel Inst. v. EPA, 526 F.2d 1027, 1051-52 (3rd Cir. 1975) ("With respect to the [BAT] standards," Congress intended "that there should be no cost-benefit analysis.").

Indeed, not only is EPA not required to consider cost-effectiveness in setting BAT, but doing so would be inconsistent with the Clean Water Act's TBEL provisions. Cost-effectiveness calculates cost in relation to pollutant removals, which is a form of balancing costs against benefits. In crafting a statutory framework of increasingly stringent technology-based effluent limitations, Congress required EPA to weigh costs against benefits for BPT standards but not for the more stringent BAT standards. *Compare* 33 U.S.C. § 1314(b)(1)(B) (effluent limitations guidelines for BPT shall require consideration of "the total cost of application of technology in relation to the effluent reduction benefits to be achieved") *with* 33 U.S.C. § 1314(b)(2)(B) (effluent limitation guidelines for BAT shall require consideration of "the cost of achieving such effluent reduction").

Congress' decision to require cost-benefit balancing for the BPT standards but not for the BAT standards implies that Congress did not intend for EPA to weigh costs against benefits when setting the more stringent BAT limits. *See generally Duncan v. Walker*, 533 U.S. 167, 173 (2001) ("'Where Congress includes particular language in one section of a statute but omits it in another section of the same Act, it is generally presumed that Congress acts intentionally and purposely in the disparate inclusion or exclusion.'") (citations omitted). As permit writers must consider the same factors when making a BPJ determination as EPA must consider when setting the ELGs, 40 C.F.R. § 125.3(c)(2), EPA Region 1 is forbidden from weighing costs against benefits in this permitting decision in the same way that EPA is forbidden from doing so when setting the effluent limitations guidelines for the industry.

B. UWAG and PSNH's Cost-Effectiveness Numbers Are Based on Costs that are not Attributable to this Permitting Decision.

Even if it were permissible for EPA Region 1 to consider cost-effectiveness as part of this permitting decision, UWAG and PSNH urge the Region to use the wrong cost-effectiveness numbers. UWAG appears to acknowledge that EPA typically calculates the cost of a technology as the capital and operating and maintenance ("O&M") costs that a facility would need to incur in order to implement the technology to comply with an effluent limitation. Critically, the compliance cost is calculated as the incremental cost needed to enable the facility to come into compliance with the new effluent limitation.

UWAG and PSNH commit a fundamental error by failing to calculate the incremental compliance cost for the Merrimack Station. Despite acknowledging throughout its comment letter that PSNH installed a VCE and crystallizer system years ago, and has been operating the system, UWAG calculates costs as if Merrimack would need to purchase and install a VCE and crystallizer system in order to comply with the revised draft permit.[6] Similarly, PSNH calculates

[6] Contrary to PSNH's assertions, the VCE and crystallizer system could meet a zero discharge limit without additional, significant capital expenditures. *See infra* at 11-13. For example, burning coal with a chloride content within the design parameters of the scrubber, and operating the VCE and crystallizer below their respective design limits for chlorides, would go a long way toward solving the technical challenges that PSNH complains of.

cost-effectiveness based on the capital costs already incurred to install the current VCE and crystallizer system. PSNH Comments at 136. This is clearly wrong—PSNH has already incurred the full capital cost to install the VCE and crystallizer system it currently operates.[7] But the capital cost to comply with an effluent limitation based on using a technology that is already installed is zero, as EPA appropriately recognized.

Similarly, as PSNH is currently operating the VCE and crystallizer system, the operating and maintenance costs attributable to Region 1's permitting decision are zero. Once again, UWAG and PSNH ignore the reality that the VCE and crystallizer system are currently being operated, so PSNH is already paying the operating and maintenance costs of the system and is requesting that the New Hampshire Public Utilities Commission allow it to recover those same costs from its ratepayers. Indeed, UWAG acknowledges this by claiming to use actual operating and maintenance expenses from Merrimack's VCE and crystallizer system. UWAG Comments at 14, 19. UWAG cannot have it both ways: if it is using actual costs, incurred prior to a final permit, then those costs are not caused by issuance of the permit.

In short, all of UWAG's cost-effectiveness numbers for the VCE and crystallizer system—and most of PSNH's—suffer from the same fatal flaw: they treat costs already incurred as if they are future compliance costs. It is appropriate to use that approach when arguing over the cost-effectiveness of VCE and crystallizer technologies at plants that have not yet installed and operated such systems. But UWAG and PSNH's approach defies both common sense and EPA's practice when applied to a plant has already incurred the full capital and O&M costs to install and operate the technology that is the basis for the effluent limitations EPA proposes to set.

The most charitable interpretation of UWAG's argument, and an argument that PSNH makes expressly, is that PSNH might have to change the way it operates the VCE and crystallizer system to meet a zero discharge limit. But PSNH is currently meeting a zero discharge limit for its FGD wastewater at Merrimack, in part because the company trucks some of its scrubber wastewater to publicly owned treatment works ("POTWs") for disposal. To the extent that the final NPDES permit issued by Region 1 allows those current practices to continue, then the incremental cost to PSNH of compliance with the final NPDES permit would be zero. Furthermore, because PSNH's assertion that additional equipment would need to be installed to meet a zero discharge limit is incorrect, *see infra* at 10-12, PSNH's calculation of the cost-effectiveness of installing additional equipment is incorrect as well.

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[7] PSNH errs by suggesting that EPA Region 1 must account for past capital costs if PSNH did not install the VCE and crystallizer system "voluntarily" but rather, as it claims, because of New Hampshire law. PSNH Comments at 135. But for a BAT determination, the relevant costs are the incremental costs to comply with the final permit. Given that PSNH was not previously required by any NPDES permit to install and operate a VCE and crystallizer system at Merrimack, past capital and ongoing O&M costs to install and operate the VCE and crystallizer system are not attributable to the current permitting decision and should not be counted as costs to comply with the pending NPDES permit renewal.

As noted above, the undersigned commenters have urged EPA Region 1 to take additional steps to prevent PSNH from discharging any of its FGD wastewater indirectly through POTWs, because POTWs are not equipped to adequately treat FGD wastewater. To the extent that any such restrictions in a final NPDES permit would lead to increased capital or O&M costs at Merrimack, the costs attributable to the issuance of the final NPDES permit are only those costs that exceed PSNH's current baseline costs of operating the VCE and crystallizer system at the Merrimack Station. However, as explained below, PSNH should be able to meet a ZLD limit without incurring significant increases in capital and O&M expenses, even if it ceases off-site shipments of purge water and other wastewaters from the VCE and crystallizer.

III. ACHIEVING ZERO LIQUID DISCHARGE OF FGD WASTEWATER AT MERRIMACK THROUGH ON-SITE TREATMENT IS TECHNOLOGICALLY FEASIBLE.

We agree with EPA that zero liquid discharge of FGD wastewater is achievable based on a determination that physical/chemical treatment, softening, and evaporation and crystallization is the best available technology for treating FGD wastewater at Merrimack Station. PSNH's explanation of why its treatment system cannot achieve zero liquid discharge reveals numerous opportunities for operational fine-tuning and building capacity into the system to make it more robust and to achieve the system's expected elimination of discharges to the Merrimack River. *Cf.* Jacobs Consultancy Testimony at 37 ("The new enhanced wastewater treatment system and secondary wastewater systems are providing immediate benefits of eliminating the discharge of metals, especially mercury and arsenic, into the Merrimack river.").

The Merrimack plant currently operates a primary wastewater treatment system ("PWWTS") that consists of chemical and physical treatment to reduce arsenic and mercury, and a polishing step called EMARS that reduces the concentrations of mercury and arsenic even further. Merrimack also operates a secondary wastewater treatment system ("SWWTS") that involves three main components to reduce the effluent from the PWWTS. The first component is a brine concentrator, which produces a distillate that can be reused in the plant and a brine that is sent for further treatment in the crystallizer. PSNH Comments at "Clarification." Two crystallizers, operated in series, along with a belt pressure filter, also referred to as a salt press, convert that brine into a solid salt cake and a condensate. When this system is working as intended, it produces no wastewater, as the condensate can be reused in the scrubber. However, according to PSNH, under current operations wastewater is generated from all steps of the process—the company transports PWWTS effluent when the concentrator is down, and concentrator effluent when the crystallizer is down.[8] This transported wastewater is indirectly discharged through local POTWs.

In its comments on the draft permit, PSNH contends that zero liquid discharge is not achievable with its SWWTS because "inherent characteristics to the full plant mass balance . . . necessitate a purge," and that options for handling this purge, namely fly ash conditioning and

[8] UWAG also describes the SWWTS as containing two crystallizers. However, they are linked such that when one is out of service for cleaning or repair, the other must be shut down as well. UWAG Comments at 10.

POTW disposal, are not workable. PSNH Comments at 80. According to PSNH, two characteristics of the influent can result in the discharge of a purge stream from the crystallizer: (1) high concentrations of chlorides, and (2) high concentrations of non-sodium salts such as calcium and magnesium chloride. *Id.* at 81-83.

The purpose of the crystallizer is to remove the salts (chlorides) from the brine, which leads to the formation of salt cakes. The crystallizer is designed to handle a level of chlorides corresponding to the chloride tolerance of the scrubber itself, plus a margin for error. *Id.* at 80-81. Because of the high chloride levels of the wastewater entering the crystallizer, the salt cake press could not keep up. The plant had to purge from the crystallizer at a rate of 3 gpm in order to avoid damage to the crystallizer from the high chloride levels. *Id.* at 82.

PSNH describes how during February and March 2014, it was forced to use 1200 ppm chloride coal because two of its three coal suppliers were unable to deliver. *Id.* at 81-82. The design tolerance of the scrubber is 900 ppm chloride coal, and the plant typically uses a 700 ppm blend. *Id.* at 81. Therefore, the plant had to purge from the crystallizer at a rate of 3 gpm because the salt cake press could not keep up, and the crystallizer could have been damaged by the high chloride levels. *Id.* at 82.

PSNH uses this story as an example of how the operational range of the plant makes it impossible to guarantee zero discharge from its SWWTS. However, in this instance, it appears that the plant was operating significantly outside the design parameters of a very expensive piece of air pollution control equipment, by using 1200 ppm chloride coal, when the design tolerance of the scrubber was only 900 ppm. *Id.* at 81-82. In determining whether a wastewater treatment technology is technologically feasible, EPA should be able to assume that the upstream parts of the plant are operating within design parameters, and not 30% above those parameters. *See Am. Petroleum Inst. v. EPA*, 540 F.2d 1023, 1034 (10th Cir. 1976) (upholding EPA's conclusion "that any failures to meet the limitations were due to improperly operated filters or use of filters beyond design capacity"); *see also Sierra Club v. Costle*, 657 F.2d 298, 382 (D.C. Cir. 1981) ("EPA explained that the failures were temporary and due to undersizing the baghouse by 40 percent from the recommended air-to-cloth ratio as well as to problems associated with working out bugs in a new system. EPA found that these problems were surmountable technological barriers to operating baghouses on a large scale."); *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1057 (D.C. Cir. 1978) (restating EPA's position that "the effluent limitations can be achieved by properly operated and maintained plants") (citation omitted); 42 Fed. Reg. 1,398, 1,420 (Jan. 6, 1977) ("Modification of the regulations to allow for excursions above the effluent limitations which have resulted from documented improper treatment system operations would be counter to the goals set forth by Congress to establish effluent limitations based upon the best practicable control technology currently available.").

Furthermore, this appears to be a problem of PSNH's own making, not an unavoidable limitation of these systems. PSNH apparently undersized its VCE and crystallizer system to allow little operational margin with respect to chlorides, despite industry practice of installing a system with excess capacity. As PSNH acknowledges, other coal plants with VCE and crystallizer systems that treat FGD wastewater operate at a lower percent of the maximum chlorine loading. PSNH describes how the five Enel facilities in Italy "operate at 50 percent of

design chloride loading. This provides an effective doubling of system capacity. As discussed in the section on coal chlorine content, the Merrimack Station system operates at design chlorine loading." PSNH Comments at 118. In other words, based either on short-cited design of the system or recent changes in coal used at the facility, the SWWTS has little margin for error. Several possible solutions to this are discussed below.

According to PSNH, the second "balance of plant" reason that the SWWTS cannot achieve zero liquid discharge, according to PSNH, is the accumulation in the crystallizer of salts other than sodium chloride, including calcium chloride, magnesium chloride, and sodium sulfate. *Id.* at 83. These salts do not precipitate out as readily as the sodium chlorides (they are more soluble) and therefore will build up in the crystallizer and raise the boiling point of the operation which can cause dangerously high pressures. *Id.* at 84. In EPA's technical development document for the Steam Electric ELGs, EPA noted that softening can be used as a pretreatment step before the crystallizer. *See* U.S. EPA, Technical Development Document for the Proposed Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category (April 2013), EPA-821-R-13-002, at 7-13. This softening step replaces the magnesium and calcium ions with sodium ions to create sodium chloride, which has lower solubility. As PSNH notes in its comments, the Torrevaldaliga Nord facility in Italy was able to resolve this problem of highly soluble salts through softening. PSNH Comments at 113. PSNH states that it softens and clarifies the wastewater before it enters the SWWTS in order to remove these less soluble salts, *id.* at 83, but claims that these salts are not all removed through those processes and therefore inevitably still accumulate. This suggests that PSNH's softening pretreatment step is not optimized. Based on the unredacted portion of PSNH's comments, we are not aware of any barriers to further optimizing the softening step in order to improve the reliability of the crystallizer.

Based on these occasional operational problems with the SWWTS, and perhaps others described in the redacted portions of their comments, PSNH characterizes the purge stream as "mandatory." Because it regards the existing methods of dealing with this purge stream—indirect discharge and ash pretreatment—as unreliable, PSNH argues that zero liquid discharge is impossible, and that the PWWTS alone is BAT.

However, there are options for achieving ZLD that PSNH does not seem to have considered. First, from its description of what components it would need to add to the SWWTS in order to comply with a ZLD limit, it appears that PSNH has little storage capacity upstream of either the brine concentrator or the crystallizer. As PSNH states: "PSNH currently has limited tank storage that allows for the accumulation of relatively small quantities of effluent during finite maintenance outages." *Id.* at 130, n.62. In describing the upgrades that would be needed to comply with the permit, PSNH indicates that there is currently no storage capacity between the concentrator and the crystallizer: "A storage tank located ahead of the crystallizers would also be required if a new objective was to increase the SWWTS's overall reliability. This tank would allow the brine concentrator to continue to operate whenever the crystallizer system is down for maintenance by storing effluent from the brine concentrator until the crystallizers are placed back in service." *Id.* at 131.

Because there is currently no storage tank between the concentrator and crystallizer, any time the latter is out of service, the company must discharge the effluent from the brine concentrator (which it currently does indirectly, by trucking the effluent to a municipal POTW). Addition of storage tanks would allow the company to reserve purge water until the unit experiencing operational difficulties can be restored to service and made available to treat the effluent on site. Such storage tanks would also allow the operator to equalize the influent to the brine concentrator and crystallizer, which reduces variation in the nature of the influent, improves operation, and thereby reduces any need for purges from the system.

Second, PSNH dismisses fly ash conditioning as a means to deal with purge streams from the SWWTS because the plant apparently does not produce enough fly ash requiring conditioning prior to disposal. Unless it is contained in the redacted portions of its comments, PSNH provides no figures concerning the amount of fly ash generated or the total amount of wastewater purged from the SWWTS over any time period, making it difficult to assess these claims.[9] Nor does PSNH discuss the possibility that the facility could stabilize the purge stream with other FGD solids or lime to produce a "fixated" waste material.[10]

Third, besides including additional storage as described above, PSNH could increase the reliability of its SWWTS by installing additional components to its system such as certain redundant components. The company contends that if it were forced to comply with EPA's proposed ZLD limitation entirely through on-site treatment, it would install an entire redundant system at a cost of approximately $42 million. That system would include: (1) a storage tank upstream of the brine concentrator to account for downtime anywhere in the SWWTS, but specifically to account for times when the brine concentrator is not available; (2) in-place fully redundant brine concentrator train; (3) storage tank located ahead of the crystallizers that would allow the brine concentrator to continue to operate whenever the crystallizer system is down for maintenance by storing effluent from the brine concentrator until the crystallizers are placed back in service; (4) a fully redundant salt press; and (5) a redundant auxiliary boiler. *Id.* at 136. It is unclear why PSNH estimates that a redundant system would cost $8 million more than the cost of Merrimack's existing system, which was installed in the last few years at a cost of around $35.3 million, and does not cover the addition of a major component of that system, namely the crystallizer.

PSNH does not provide an estimate to install a parallel crystallizer, but it would presumably be significantly less than either $35 or $42 million. PSNH also notes that "Iatan and many of the ENEL facilities have fully redundant brine concentrator trains," suggesting that the use of parallel or redundant components of a ZLD system is standard industry practice. The use

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[9] According to the UWAG comments, the "actual purge flow is, on average, 3 gpm." UWAG Comments at 19.

[10] If such materials were disposed of in a landfill, EPA should require the leachate from that landfill to be treated, as described in our initial comments. Letter from Thomas Cmar, Earthjustice to Sharon DeMeo, EPA Region 1 at 10-11 (Aug. 18, 2014).

of redundant treatment components is a factor that EPA can consider in making a best available technology determination.[11]

In sum, the technical problems with the SWWTS described by PSNH are largely problems of its own making. As PSNH itself acknowledges, some of the problems that it has experienced stem from the company running the Merrimack Station using coal blends outside the design parameters of both its FGD and wastewater treatment systems. Other problems stem from PSNH's failure to optimize its system, by adding storage tanks that would allow for storage of wastewater for later on-site treatment or redundant components that could continue to treat FGD wastewater if and when some system components fail. PSNH also apparently has not optimized its pre-treatment softening process. As a result, none of the problems cited by PSNH demonstrate that it would not be feasible for the company to operate its SWWTS so as to reliably meet a ZLD limit for scrubber wastewater from Merrimack Station.

IV. EPA REGION 1 SHOULD RELY ON INDIANAPOLIS POWER & LIGHT'S RECENT STUDY OF FGD WASTEWATER TREATMENT OPTIONS AS FURTHER SUPPORT FOR ITS REVISED BAT DETERMINATION.

Finally, the undersigned commenters call EPA Region 1's attention to a recent study submitted by Indianapolis Power & Light ("IPL") to the Indiana Utility Regulatory Commission ("IURC") that further supports Region 1's revised BAT determination here. IPL has petitioned the IURC for approval to install new treatment for FGD wastewater and other wastestreams at IPL's Petersburg and Harding Street Stations. *See* Verified Petition of Indianapolis Power & Light Company, Cause No. 44540 (I.U.R.C. Oct. 3, 2014), attached hereto as Exhibit B; Direct Testimony of Angelique Oliger, Cause No. 44540 (I.U.R.C. Oct. 16, 2014), attached hereto as Exhibit C;[12] Direct Testimony of Dennis H. Fink, Cause No. 44540 (I.U.R.C. Oct. 16, 2014), attached hereto as Exhibit D. In support of its petition, IPL submitted a study authored by CH2M Hill that evaluated IPL's "best overall approach" to comply with those power plants' current NPDES permits along with future CWA requirements. *See* Fink Testimony at 5-9, Attachment DHF-1. CH2M Hill evaluated different treatment options according to a range of criteria, including technical feasibility, cost, and reliability of operation. *Id.* at 8.

For treatment of FGD wastewater, CH2M Hill found that IPL should install a VCE system that achieves Zero Liquid Discharge. *Id.* at 22-23, 25-26, Attachment DHF-1 at 4-6, 4-7, 6-5, 6-6, 7-4.[13] To keep costs down, CH2M Hill recommended that IPL recycle a portion of the

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[11] EPA has the authority to consider redundant controls both because PSNH concedes that such controls are available (even though PSNH disputes the cost-effectiveness of such controls) and because there is evidence that the industry practice is to install redundant systems as part of a VCE and crystallizer system.

[12] We have omitted the attachments to the Direct Testimony of Angelique Oliger because of their large file size and because they are not directly relevant to this proceeding.

[13] IPL has requested that the IURC approve installation of a VCE system to treat FGD wastewater at its Petersburg Station. At its Harding Street Station, IPL has determined that refueling the plant to run on natural gas (thus eliminating the need for operation of a FGD) is the least-cost method of compliance with CWA and other environmental requirements. IPL states,

FGD wastewater back into each unit's FGD after primary (physical-chemical) treatment but before secondary treatment in the evaporator. *Id.* CH2M Hill found that only wastewater treatment systems that implemented some form of secondary treatment were reliable options for IPL to ensure CWA compliance into the future, and further found that VCE systems that recycled a portion of the FGD wastewater prior to secondary treatment had a lower cost than biological treatment systems. *Id.* Attachment DHF-1 at 6-2.

The IPL/CH2M Hill study clearly supports EPA Region 1's revised BAT determination here. The study finds that treatment of FGD wastewater with a VCE system to achieve Zero Liquid Discharge is technologically and economically feasible, and the study's recommendation that IPL modify the design of the system to recycle a portion of the wastewater only underscores that VCE systems are adaptable and can be optimized at the individual plant level to ensure cost-effective operation. The undersigned commenters urge EPA Region 1 to evaluate the IPL / CH2M Hill study as part of the administrative record of this permitting decision, as it reinforces that Region 1's revised BAT determination for FGD wastewater at Merrimack is both legally required and factually well-supported.

V. CONCLUSION

For the foregoing reasons, and for those reasons explained in our initial comments on the revised draft permit, the undersigned commenters urge EPA Region 1 to finalize the Merrimack Station's NPDES permit with a Zero Liquid Discharge requirement for FGD wastewater. As set forth in our opening comments, EPA Region 1 should also take steps to restrict Merrimack's indirect discharges of FGD wastewater.

Please do not hesitate to contact the undersigned if you have any questions about our response to other parties' comments. Thank you in advance for your consideration of these important issues.

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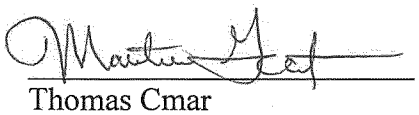
however, that if it were to continue operating the Harding Street Station as a coal-burning plant, it would request that the IURC approve installation of a VCE system to treat FGD wastewater at Harding Street Station as well. *See generally* Exhibits B-D.

Sincerely,



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